IN THE SPECIFICATION:

Please insert the following paragraph at page 7, between paragraphs [0025] and [0026]:

[0025.1] Figure 4C is an enlarged detail view of the substrate clamp of Figure 4B.

Please replace the paragraph [0027] with the following paragraph:

[0027] Figure 6A depicts a partial view of another embodiment of a carrier head assembly.

Please insert the following paragraph at page 7, between paragraphs [0027] and [0028]:

[0027.1] Figure 6B is an enlarged detail view of a contact plate.

Please replace paragraph [0034] with the following paragraph:

[0034] Figure 2 is a cross sectional view of one embodiment of an apparatus 20 for depositing and planarizing a metal layer on a substrate 22. One example of an apparatus that may be adapted to benefit from the invention is an ELECTRA™ electroplating tool, available from Applied Materials, Inc., of Santa Clara, California. An example of a suitable electroplating tool is described by *Dordi, et al.* in co-pending U.S. Patent application serial No. 09/289,074, U.S. Patent No. 6,258,220, filed on April 8, 1999 ~~2000~~, assigned to common assignee Applied Materials, Inc., and which is incorporated by reference herein to the extent not inconsistent with the invention. The apparatus 20 generally includes a carrier head assembly 30 movably supported by a stanchion 80 over a partial enclosure 34. The stanchion 80 and enclosure 34 are generally disposed on a common base 82. The stanchion 80 generally includes a base support 84 and a lift mechanism 86. The base support 84 extends perpendicularly from

the base 82 and may be rotatable on its axis so that the carrier assembly 30 may be moved over the partial enclosure 34 or to other positions, for example, to other enclosures or to interface with other processing systems not shown.

Please replace paragraph [0035] with the following paragraph:

[0035] The lift mechanism 86 is coupled to the carrier assembly 30. The lift mechanism 86 generally controls the elevation of the carrier assembly 30 in relation to the partial enclosure 34. The lift mechanism 86 includes ~~be~~ a linear actuator 88, such as a ball screw, lead screw, pneumatic cylinder and the like, and a guide 90 that slides along a rail 92. The rail 92 is coupled to the base support 84 by a hinge 94 so that the rail 92 of the lift mechanism 86 (*i.e.*, direction of motion) may be controllably orientated through a range of angles between about 90 to about 60 degrees relative to horizontal. The lift mechanism 86 and hinge 94 allows the carrier assembly 30 holding a substrate 22 to be lowered into the partial enclosure 34 in various orientations. For example, to minimize the formation of bubbles upon the substrate 22 when interfacing with fluids disposed within the enclosure 34, the substrate 22 may be orientated at an angle during entry into the partial enclosure 34 and then rotated to a horizontal orientation once therein.

Please replace paragraph [0042] with the following paragraph:

[0042] The diffuser plate 44 provides support for the permeable disc 28 in the partial enclosure 34. The diffuser plate 44 can be secured in the partial enclosure 34 using fasteners such as screws 38 or other means such as snap or interference fit with the enclosure, being suspended therein and the like. The diffuser plate 44 can be made of a material such as a plastic, e.g., fluoropolymer, PE, TEFLON®, PFA, PES, HDPE, UHMW or the like. The diffuser plate 44, in at least one embodiment, includes a plurality of holes or channels 46 formed therein. The holes 46 are sized to enable fluid flow therethrough and to provide uniform distribution of electrolyte through the permeable disc 28 to the substrate 22. The permeable disc 28 can be fastened to the diffuser plate 44 using adhesives that are compatible with the fluid environment and the

processing requirements. The diffuser plate 44 is preferably spaced from the anode 26 to provide a wider process window, thus reducing the sensitivity of plating film thickness to the anode dimensions, and to separate the accelerator and suppressor decomposition by-products, for example, a mono-sulfide compound degraded from an accelerator, such as bis(3-sulfopropyl) disulfide, $C_6H_{12}Na_2O_6S_4$, commercially available from the Raschig Corp. of Germany, from a main plating volume 38 as shown in Figure 2 ~~defined between the permeable disc 28 and the substrate 22~~.

Please replace paragraph [0045] with the following paragraph:

[0045] The substrate carrier assembly 30 generally includes a drive system 68, a head assembly 78 and a seat assembly 76. The drive system 68 is generally coupled to the guide 90 of the stanchion 80. The drive system 68 comprises a column 70 that extends from a power head 56 to support the seat assembly 76. The power head 56, which may be an electric or pneumatic motor, generally provides rotation to the column 70 along a central axis. The drive system ~~86~~ 68 additionally includes an actuator 54 that is disposed within the column 70 and is coupled to the head assembly 78. The actuator 54, which may be a lead screw, pneumatic cylinder or other linear actuator, allows the head assembly 78 to move in relation to the seat assembly 76.

Please replace paragraph [0049] with the following paragraph:

[0049] The stem 304 is coupled to a second side 316 of the support plate 306. The stem 304 is generally orientated perpendicular to the support plate 306. The stem 304 may include passages disposed therein to provide vacuum or fluid to the first side 314 of the support plate ~~308~~ 306 or other portions of the head assembly 78.

Please replace paragraph [0053] with the following paragraph:

[0053] Referring to Figure 4C, the ~~The~~ second clamp 404 generally includes a notch 418 formed on the contact surface near the tip. The notch 418 has a bottom

surface 420 that is generally greater in length than the thickness of the substrate 22. A wall 422 of the notch 418 closest the end of the first clamp 404 is generally chamfered or angled to contact the bevel or rounded edge of the substrate 22.

Please replace paragraph [0054] with the following paragraph:

[0054] Figures 5A, 5B, 5C and 5D depict the substrate 22 being loaded into the carrier assembly 30. In Fig. 5A, the gripper fingers 74 are rotated to form the seat 50 that receives the substrate 22 from the robot not shown. The head assembly 78 is disposed in a first position 502 proximate the seat assembly 76. The substrate clamps ~~322~~ 320 are fully extended from the first side 314 of the support plate ~~308~~ 306. After the robot is removed leaving the substrate 22 in the seat 50 of the gripper finger 74, the head assembly 78 is then extended into a second position 504 to load the substrate 22 held in the seat 50 between the substrate clamps ~~322~~ 320(See Figure 5B). The first clamps 402 center the substrate 22 relative to the head assembly 78. The clamps ~~322~~ 320 are then retracted towards the support plate ~~308~~ 306. The angled wall 422 of the second clamp 404 contacts the beveled edge of the substrate 22 and pulls the substrate 22 against the support plate ~~308~~ 306. The interaction between the angled wall 422 and substrate 22 additionally causes the second clamp 404 to flex outwardly against the détente pin 416, displacing the bottom surface 420 of the notch 418 from the substrate perimeter. The flexed second clamp 404 and the détente pin 416 combine to urge the second clamp 404 inwardly to capture the substrate 22 against the support plate ~~308~~ 306 while providing good electrical contact between the clamp 404 and substrate 22 (See Figures 5C and 5D).

Please replace paragraph [0057] with the following paragraph:

[0057] Figure 6A depicts a partial view of another embodiment of a substrate carrier assembly 600. The carrier assembly 600 is substantially similar to the carrier assembly 30 described above except wherein a contact plate 602 is disposed on a support plate 604. Generally, the contact plate 602 is disposed on a first side 606 of the

support plate 604. The contact plate 602 is comprised of a conductive material and is utilized to bias the substrate 22 during processing. The contact plate 602 is electrically coupled to a terminal 610 disposed on a second side 612 of the support plate 604. The terminal 610 facilitates coupling the contact plate 602 to a power source (not shown) by a lead 608 that is used to bias the substrate 22.

Please replace paragraph [0058] with the following paragraph:

[0058] Referring to Figure 6B, the ~~The~~ contact plate 602 is generally located proximate the edge of the substrate 22. The contact plate 602 couples the charge to the substrate 22 directly or to a conductive seed layer 620 disposed on the substrate surface that wraps around the substrate edge to a portion of the substrate backside.

Please replace paragraph [0059] with the following paragraph:

[0059] Figure 7 depicts another embodiment of a substrate carrier 700. The substrate carrier 700 generally includes a housing 702 defining a central cavity 704 that is open on a bottom 706 and through at least one port 708 disposed in the housing 702. The port 708 is typically sized to allow the substrate 22 carried by a robot (not shown) to be placed within the cavity 704. A thrust plate 710 is disposed in the housing 702 and may be actuated towards the bottom 706 of the housing 702. A ring 712 circumscribing the open portion of the bottom 706 includes a ledge 714 that supports the substrate 22 as the thrust plate 710 urges the substrate 22 against the ring 712. The ring 712 may provide the electrical contact to bias the substrate 22. Alternatively, the thrust plate 710 may alternatively include a contact plate 716 similar to the contact plate 602 described in reference to Figure 6A & 6B.

Please replace paragraph [0061] with the following paragraph:

[0061] The apparatus 800 discloses an enclosure 834 which typically includes a diffuser plate 844 and a permeable disc 828 disposed therein in a first relative position 810 adjacent to but vertically displaced from substrate 822 disposed in carrier assembly 830 described above in Figure 2. The permeable disc 828, such as a polishing pad, is disposed and supported in the electrolyte cell on the diffuser plate 844. The partial enclosure ~~34~~ 834 can be a bowl shaped member made of a plastic such as fluoropolymers, TEFLON®, PFA, PE, PES, or other materials that are compatible with plating chemistries. The enclosure 834 generally defines a container or electrolyte cell in which an electrolyte or other polishing/deposition fluid can be confined. The electrolyte used in processing the substrate 22 can include metals such as copper, nickel or other materials which can be electroless deposited onto a substrate.

Please replace paragraph [0069] with the following paragraph:

[0069] In one embodiment, the transfer station 1022 comprises at least an input buffer station 1028, an output buffer station 1030, a transfer robot 1032, and a load cup assembly 1024. The loading robot 1010 places the substrate 22 onto the input buffer station 1028. The transfer robot 1032 has two gripper assemblies, each having pneumatic gripper fingers that grab the substrate 22 by the substrate's edge. The transfer robot 1032 lifts the substrate 22 from the input buffer station 1028 and rotates the gripper and substrate 22 to position the substrate 22 over the load cup assembly 1034, then places the substrate 22 down onto the load cup assembly 1024. An example of a transfer station that may be used to advantage is described by Tobin in United States Patent Application ~~09/314,771~~ 09/414,771, Patent No. 6,156,124, filed on October 10, 1999, assigned to common assignee Applied Materials, Inc., and which is hereby incorporated by reference.

Please replace paragraph [0072] with the following paragraph:

[0072] Fig. 11 depicts a sectional view of the substrate carrier head assembly 1004 supported above the plating station ~~1006~~ 1002. In one embodiment, the substrate carrier head assembly 1004 is substantially similar to the substrate carrier assembly 30 described above. Similarly, the plating station ~~1006~~ 1002 includes a partial enclosure 1102 that defines an electrolyte cell to facilitate metal deposition on the substrate 22 that is substantially similar to the enclosure 30 described above. The enclosure 1102 of the plating station ~~1006~~ 1002 is coupled to a motor that provides rotation of the enclosure 1102.

Please replace paragraph [0073] with the following paragraph:

[0073] The arrangement of the plating stations ~~1006~~ 1002 and polishing stations ~~1002~~ 1006 on the depositing and planarizing module 1012 allow for the substrate 22 to be sequentially plated or polishing by moving the substrate between stations. The substrate 22 may be processed in each station 1002, 1006 while remaining in it respective head or carrier 1038, 1004, or the substrate may be switched between heads by offloading the substrate from one head into the load cup and loading into the substrate into the other polishing head. Optionally, the depositing and planarizing module 1012 may comprise only one type of head may be utilized (i.e., all polishing heads 1038 or all carrier heads 1004).

Please replace paragraph [0075] with the following paragraph:

[0075] Each polishing station 1125a-1125c includes a rotatable platen 1130 having a polishing pad 1100 disposed thereon. Each platen 1130 may be a rotatable aluminum or stainless steel plate connected to a platen drive motor (not shown). The polishing pads 1100 may ~~compride~~ comprise a conventional polishing or a fixed abrasive polishing pad, e.g., a polishing pad comprising abrasive particle in a binder polymeric material. Alternatively, an abrasive slurry may be provided to a conventional

polishing pad for processing. Further, an abrasive free composition may be applied to convention pad to enact polishing of a substrate disposed thereon.